ABSTRACT OF THE DISCLOSURE

A solution of a structure optimal designing problem formulated as a dual optimization problem having first and second solution processes is obtained.

5 It is assumed that a status variable vector is a displacement in each node and a design variable vector is the existence ratio of structural member in each element. At the first solution process including the second solution process as one step, stored design

10 variable vector and status variable vector are read and the design variable vector is updated. At the second solution process, the stored design variable vector and status variable vector are read and the status variable vector is updated. A second evaluation functional of

15 the second solution process comprises the norm of residual vector and the status variable vector is not initialized upon start of the second solution process. Further, the second solution process is performed by a conjugate gradient method. At the second solution

20 process, preconditioning is performed on a nodal force vector based on a global stiffness matrix, and the design variable vector and status variable vector stored in a second storage are read and the status variable vector is updated. Also, the status variable

25 vector is not initialized upon start of the second solution process.

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